Section 2, Amendments to Claims and New Claims; Status Shown:

1. **(Amended)** A computer data processing system including a central processing unit configured with an integrated computer control software system for the management of information data objects including automatic organization, indexing and viewing of information, said data processing system comprising:

a) a computer-readable memory structured with a partitioned storage organization having at least one **[object store object-oriented]** database <u>for storing objects</u> including <u>at least</u> <u>one of</u> B-Tree nodes, foundation objects<u>,</u> **[and]** reference objects, and **[at least one catalog database containing]** <u>object</u> metadata;

b) a computer display connected to said memory for displaying objects from said **[object-oriented]** database in a desktop-style interface;

c) a computer-user interface device for inputting information to said data processing system, including information to specify objects or properties of objects, and for input of objects from external sources;

d) an applications program having component architecture code processed by said central processing unit so as to scan source data of objects, create or extract metadata from said scanned objects, store said metadata in said **[catalog]** database, and store reference objects in said <u>database</u> **[object store]** with <u>link</u> metadata **[link]** attached to said reference objects to provide automatic organization, indexing and viewing of information objects from multiple <u>different domain</u> sources in said desktop-style interface while storing only one instance of said reference object<u>; and</u>

<u>e) said component architecture code providing automatic organization, indexing and viewing of said information objects includes at least one of:</u>

<u>i) collection-based key phrase hyperlinking between objects and collections in which they are contained;</u>

<u>ii) maintaining persistent collections with dynamic updating as the object domains change so as to reflect the true contents of the collection; and</u>

<u>iii) automatic generation of collection contents by criteria specified for collection membership through at least one object content attribute selected by the user from among at least one of user-defined categorizations, user of system-defined metadata query specifications, user-defined key-phrase</u>

matching, and combinations thereof.

2. **(Amended)** A computer data processing system as in claim 1 wherein said central processor unit processes said code so as to generate and provide **at least one of**:

i) [automatic, collection-based key-phrase hyperlinking;

ii)] viewing by reference, **including at least one of:** [by] applying a user's categorizations **to objects in at least one container** [in an inverse manner] to show relationships between objects, and filtering out those that are not relevant to the current view; **gathering together the set of containers in which the currently-viewed objects exist, showing the set of containers as a cross-referenced set in lieu of the objects themselves, and permitting the user to select at least of the cross-reference containers which results in the display of only those objects that exist in all of the selected containers simultaneously, thereby showing relationships between objects and their categorizations and filtering unwanted objects from the current view;**

ii) [iii)] refining of views, by automatically conjoining specifications of multiple chosen collections;

[iv) time-based dynamic hierarchical collections;]

iii) [v] sticky path hierarchical scroll display;

[vi) **automatic generation of collections by one or more object content attributes selected by the user from among user-defined categorization(s), user of system-defined metadata query specification(s), user or system-defined key phrase matching, and combinations thereof;**]

iv) [vii)] work**ing** sets for **which** [determining] the union of applications used to create/edit a given set of objects in a collection or other container **is determined**;

v) [viii)] an extensible domain mechanism for adding functionality to the system;

vi) [ix)] an extensible mechanism for extracting, storing, displaying [**(via get info)**] and managing attribute**s** from files of many different formats;

vii) [x] real-time filtering/sorting;

viii) [xi **notification to the user**] **providing a notify event** of collection establishment and changes in collections;

ix) [xii] link creation between objects and collections by **at least one of** drag-and-

drop attribution, including the use of collections to add key phrases to an object by dragging into a collection**, user entry of collection names for a given object, user-defined metadata queries, user choosing collections, and automatically by the system matching metadata criteria**; and

x) [xiii)]) the setting of specific property values of objects by dragging object icons to special drop-targets.

3. **(Amended)** A computer data processing system as in claim 1 wherein said central processing unit processes so as to generate and store in said **[catalog]** d atabase, metadata selected from association metadata and link metadata, said metadata permitting storage of only one reference object and linking it to one or more collection groups.

4. **(Amended)** A computer data processing system as in claim 3 wherein said central processing unit processes so as to include in said metadata a UID and a UUID and to alias said UID and UUID to collections selected, set or created by the user to create retrieval links from the relevant collections to the reference object so that only one instance of said reference object is stored in said **[object oriented]** database, thereby saving data storage capacity.

5. **(Amended)** A computer data processing system as in claim 4 wherein said central processing unit processes so as to scan an incoming object's source data, and upon recognition of individual objects as contained in said source data, create reference objects tagged with UUIDs to provide a one-to-one mapping between external data and said reference objects, and to automatically classify and place representative icons of objects into multiple collections or containers u sing sa id l ink m etadata r ather t han d uplication o f s aid o bjects, t hereby a llowing users to categorize objects in ways that most clearly reflect different approaches and ways of viewing the same information, and to apply a user's categorizations **[in an inverse manner]** to show relationships between objects and filter out those that are not relevant to the current view for user viewing by reference.

6. **(Amended)** A computer data processing system as in claim 3 wherein said central processing unit processes so as to place **[only]** link metadata in said **database** [catalog] for ease of organization and cross-referencing of objects among a large group of collections and containers by clicking on the icon representing an object in one collection window and dragging it into another collection window to establish a new link and new link metadata entry

in said [catalog] database so that said reference object is viewable, accessible and retrievable from both collections.

7. **(Original)** A computer data processing system as in claim 3 wherein said central processing unit processes so as to query said metadata, including queries selected from matching key phrases in an object's text, matching dates and time ranges or exact matches, matches of sizes, ordering or type, and to create dynamic links based on matches detected, including automatic query processing of incoming external and internally created objects for dynamic updating of all relevant collections so that any changes in the user's information space or desktop results in timely and appropriate changes to affected object views and for hypertext generation, highlighting and linking in textual properties of objects, including objects selected from e-mail text and document text.

8. **(Original)** A computer data processing system as in claim 1 wherein said central processing unit processes so as to provide, during user scrolling, views of objects and their containment relationships or location paths within said memory in a window on said display so the visible object's containment hierarchies are continuously made visible in a dynamically-updating portion of the window, and as the scrolling continues in descending hierarchical order, the container of each branch remains visible in, or sticks-to, a dynamically-updating portion of the window, and in ascending hierarchical order, the stuck container views are deleted.

9. **(Original)** A computer data processing system as in claim 1 wherein said central processing unit processes so as to provide to users a basic set of organization principles for users to intuitively manage their information so as to reflect the information's relationships as they occur and change in the real world, including relationship principles based on people, projects, activities, events, time and place.

10. **(Original)** A computer data processing system as in claim 1 wherein said central processing unit processes so as to create a mirrored object system of text and image information, to pro-vide object property-based information access, to provide a comprehensive desktop interface having collections of logical groupings of objects and to permit user viewing by reference, and said processing is structured as an extensible platform.

11. **(Amended)** Method of management of informational objects by a computer system having a central processing unit, interface devices, computer-readable memory, and a display,

comprising the steps of:

a) providing code structure that partitions said memory to provide storage organization having at least one [object store object-oriented] database **for storing objects** including **at least one of** B-Tree nodes, foundation objects [and] reference objects, and **object metadata** [at least one catalog database, and];

b) causes said computer system to process by scanning source data of objects, **to create or extract** [creating or extracting] metadata from said scanned objects, **to store** [storing] said metadata in said [catalog] database, **and to store** [storing] reference objects in said **database** [object store] with metadata links attached to said reference objects, thereby to provide automatic organization, indexing and viewing of information objects from multiple **different domain** sources in a desktop-style interface while storing only one instance of said reference object**; and**

c) said processing to provide automatic organization, indexing and viewing of information objects from multiple sources includes at least one step of:

i) collection-based key phrase hyperlinking between documents and collections in which they are contained;

ii) maintaining persistent collections with dynamic updating as the object domains change so as to reflect the true contents of the collection; and

iii) automatic generation of collection contents by criteria specified for collection membership through at least one object content attribute selected by the user from among at least one of user-defined categorizations, user or system-defined metadata query specifications, and user-defined key-phrase matching, and combinations thereof.

12. **(Amended)** Method of management of informational objects by a computer system as in claim 11 wherein said central processor unit processes said code in **at least one** step **of** generating and providing **at least one of**:

i) [automatic, collection-based key-phrase hyperlinking;

ii)] viewing by reference, **including at least one of:** [by] applying a user's categorizations **to objects in at least one container** [in an inverse manner] to show relationships between objects, and filtering out those that are not relevant to the current view; **gathering the set of containers in which the currently-viewed**

<u>objects exist, showing the set of containers as a cross-referenced set in lieu of the objects themselves, and permitting the user to select at least of the cross-reference containers which results in the display of only those objects that exist in all of the selected containers simultaneously, thereby showing relationships between objects and their categorizations and filtering unwanted objects from the current view;</u>

<u>ii)</u> [iii)] refining of views, by automatically conjoining specifications of multiple chosen collections;

[iv)**time-based dynamic hierarchical collections;**]

<u>iii)</u> [v] sticky path hierarchical scroll display;

[vi) **automatic generation of collections by one or more object content attributes selected by the user from among user-defined categorization(s), user of system-defined metadata query specification(s), user or system-defined key phrase matching, and combinations thereof;**]

<u>iv)</u> [vii)] work<u>ing</u> sets for <u>which</u> [determining] the union of applications used to create/edit a given set of objects in a collection or other container <u>is determined</u>;

<u>v)</u> [viii)] an extensible domain mechanism for adding functionality to the system;

<u>vi)</u> [ix)] an extensible mechanism for extracting, storing, displaying [**(via get info)**] and managing attribute<u>s</u> from files of many different formats;

<u>vii)</u> [x] real-time filtering/sorting;

<u>viii)</u> [xi **notification to the user**] <u>providing a notify event</u> of collection establishment and changes in collections;

<u>ix)</u> [xii] link creation between objects and collections by <u>at least one of</u> drag-and-drop attribution, use of collections to add key phrases to an object by dragging into a collection<u>, user entry of collection names for a given object, user-defined meta-data queries, user choosing collections, and automatically by the system match-ing metadata criteria</u>; and

<u>x)</u> [xiii)]) the setting of specific property values of objects by dragging object icons to special drop-targets.

<u>13 (New) A computer data processing system as in claim 1 wherein said central processing unit processes so as to specifically include objects in, or exclude objects from, a</u>

collection, while simultaneously performing automatic collection of objects using meta-data criteria, thereby allowing the user to specify objects for a collection via criteria and specifically exclude objects that, despite matching the criteria, should be excluded from the collection; and to include items that, despite not matching the criteria, should be in-cluded in the collection.

14. (New) A computer data processing system as in claim 1 wherein said central processing unit processes, upon an object becoming a member of a container, a property of the object is modified based on the inclusion of the object in the container, or, con-versely, a property of the container is modified based on the inclusion of the object in the container.

15. (New) A computer data processing system as in claim 1 wherein said central processing unit processes so as to create metadata representing dependent properties as a function of other object metadata, or object content data.

16. (New) A computer data processing system as in claim 1 wherein said central processing unit processes so as to automatically maintain consistency of collection contents based on notification of changes in object metadata, so that the collection content is updated to reflect the object metadata changes.

17. (New) A computer data processing system as in claim 1 wherein said central processing unit processes so as to recognize when a collection's object set changes, and to cause a process to be run based on that event.

18. (New) Method of management of informational objects by a computer system as in claim 11 wherein said central processor unit processes said code in at least one step of generating and displaying, during user scrolling, views of objects and their contain-ment rela-tionships or location paths within said memory in a window on said display so the visible object's containment hierarchies are continuously made visible in a dynamic-ally-updating portion of the window, and as the scrolling continues in descending hier-archical order, the container of each branch remains visible in, or sticks-to, a dynamic-ally-updating portion of the window, and in ascending hierarchical order, the stuck con-tainer views are deleted.

19. (New) Method of management of informational objects by a computer system as in claim 11 wherein said central processor unit processes said code in at least one step of generating creation of links between objects and collections by at least one of: a) clicking on the icon representing an object in one collection window and dragging it into another collection window to establish a new link and new link metadata entry in said database so that said reference object is viewable, accessible and retrievable from both collections; b) by user input of collection names; c) user choice of collections from a display shown to the user; d) user-defined metadata queries; or e) automatically by the system processing to match metadata criteria.

20. (New) Method of management of informational objects by a computer system as in claim 11 wherein said central processor unit processes said code in at least one step of providing specific inclusion of objects in, or exclusion of objects from, a collection, while simultaneously performing automatic collection of objects using metadata criteria, thereby allowing the user to specify objects for a collection via criteria and specifically exclude objects that, despite matching the criteria, should be excluded from the collection; and to include items that, despite not matching the criteria, should be included in the collection.

End of Section 2, Claim Amendments: